

Typifications in *Andersonia* (Ericaceae: Epacridoideae)

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Abstract

Lectotypes are selected for *Andersonia* R.Br (Ericaceae) and eight taxa within the genus: *A. aristata* Lindl. *A. brevifolia* Sond., *A. heterophylla* Sond., *A. involucrata* Sond., *A. sprengelioides* R.Br., *A. lehmanniana* subsp. *lehmanniana* (Sond.)L.Watson and *A. lehmanniana* subsp. *pubescens* (Sond.)L.Watson. *Andersonia patens* Sond. is lectotypified in synonymy with *A. sprengelioides*.

Introduction

During ongoing taxonomic study of *Andersonia* R.Br. (Lemson 2001, 2007) it has emerged that typifications of a number of species names require clarification. As noted by Crayn *et al.* (2014) *Andersonia* is also among a number of generic names within Epacridoideae (Ericaceae) that have remained untypified. This paper provides lectotypifications for the name of the genus and for several taxa at specific and subspecific levels in which it is advantageous to do prior to publication of new taxa.

Methods

Materials held at various herbaria were consulted. Where images are cited, they were provided by the host institution as indicated in the text, or accessed via the Global Plants Initiative portal (JSTOR 2000+). Herbarium abbreviations follow Index Herbariorum (Thiers, continuously updated).

Typifications

Andersonia R.Br., *Prodromus Florae Novae Hollandiae et Insulae Van-Diemen*: 553 (1810).

Type (designated here): *Andersonia sprengelioides* R.Br., *Prodromus Florae Novae Hollandiae et Insulae Van-Diemen*: 554 (1810).

Notes: Brown's (1810) treatment described the genus and six species, but did not supply typifications. *Andersonia sprengelioides* has been selected as the type because its taxonomy has been stable, its morphology is not widely variant and it is the species most commonly represented in collections outside the Natural History Museum (BM). All of Brown's five other species are presently under review – *A. squarrosa* R.Br. and *A. depressa* R.Br. have been included in *Andersonia caerulea* R.Br., a species beset by taxonomic uncertainty and requiring substantial revision, while *Andersonia micrantha* and *A. parvifolia* are both morphologically variable and contain disparate elements that must be reconsidered. Hence, *A. sprengelioides* represents the best available option.

Andersonia aristata Lindl., *Sketch of the Vegetation of the Swan River Colony*. xxv (1 Dec. 1839).

Type citation: [not cited].

Lectotype (designated here): Western Australia: Vasse River, on the South West coast of New Holland, Mrs Molloy s.n., 1839 (CGE5075 – lower right specimen, image seen); isolecto: CGE5075 – lower central specimen (image seen).

Residual syntypes: Swan River, Capt. James Mangles s.n. CGE5075 (image seen); Swan River Mr Toward 25, CGE5075 (image seen).

Atherocephala drummondii DC, *Prodromus* 7: 767 (late December 1839) Type citation: 'In Nova-Hollandia ad Swan-river legit cl. Drummond! (v. s. a. cl. inv.)'

Notes: The sheet at Cambridge comes from Lindley's personal herbarium, (C. Bartram *pers. comm.*) and includes four specimens from three separate gatherings (Fig. 1): two are attributed to Mrs [Georgiana] Molloy, and one each to Capt. James Mangles and Mr Toward. Neither the Mangles nor Toward collections are accompanied by locality information or collection date. The Molloy specimens are dated 1839 and given as originating at the Vasse River.

Although Molloy is not explicitly acknowledged in the *Sketch*, Lindley is known to have used her collections in its preparation (Lines 1994, Hasluck 2002). The materials were supplied to Lindley by Mangles, for whom Molloy collected over the period 1838 to 1840 (Hasluck 2002). Her first collections were consigned from the Swan River colony at the end of 1838 aboard the *Joshua Carroll* (Molloy 1838, Hasluck 2002), which arrived at Margate on 21 April 1839 (Anonymous 1839). Lindley was clearly impressed with Molloy's specimens (Lindley 1839a, Moyal 1981) and Molloy's later correspondence to Mangles (Molloy 1840) implies that Mangles had informed her contribution to Lindley's publication (Hasluck 2002).

The collecting locality refers to the region surrounding Busselton. Although the Molloy family lived at Augusta until mid 1839 (Molloy 1838, Hasluck, 2002), the letter enclosed in Molloy's 1838 dispatch makes it clear that some specimens had been collected by her husband Capt. John Molloy whilst at the Vasse on other business (Molloy 1838, Hasluck 2002).

On the CGE sheet the two Molloy pieces are separate, although the label is pasted across both bases. The piece on the right (Fig. 1, black arrow) is designated as the lectotype on the basis that it includes flowers at all stages of development. The specimen in the centre is an isolectotype. The remaining materials on the sheet are from other collections attributed to Capt. James Mangles and a Mr. Toward. Mangles visited the Swan River Colony in 1831 (Hasluck 2002) but there is no annotation that clarifies whether this piece was collected at that time. The origin of the Toward piece is also not completely resolved. These are not regarded as type material.

In a previous revision (Watson 1962, p. 116) the type citation was given as 'Swan River, 1838, Lindley s.n.', with isotypes stated as being at K and BM. There is a sheet at Kew that appears to have come from Bentham's collection, which carries two pieces – one attributed to Drummond and collected in 1839, and the other hand annotated as 'Swan River, Lindley, 1838'. This could be the specimen referred to by Watson (1962), however that work contains no discussion of the basis of the type listing. While BM has no material of *A. aristata* that can be associated with Lindley, it does hold Drummond collections that may be type material of the heterotypic synonym, *Atherocephala drummondii* DC. That name is not considered here.

Andersonia brevifolia Sond. in Lehm., *Plantae Preissianae* 1: 332 (1845).

Type citation: 'In planitie arenosa haud longe a Halfway House, York, d. 12 Sept. 1839, *Herb. Preiss. No 462*'.

Lectotype (here designated): Western Australia: In planitie arenosa haud longe a Halfway House, York, d. 12 Sept. 1839, *Herb. Preiss No 462* (Lecto: MEL710502!); isolecto: C10010876 (image seen), HBG507634 (image seen), LD1076302!, MEL710595!, MEL710596!, S08-3031 (image seen).

Notes: A sheet at Hamburg (HBG507634) was previously identified as a holotype (Watson 1962). It carries a name label in Sonder's hand and an annotation by Watson as 'Type?'. The same treatment (Watson 1962) called a specimen at The National Herbarium of Victoria (MEL) a 'haptotype' and another at V. L. Komarov

Botanical Institute, St Petersburg (LE) an isotype. There was no explanation of the grounds on which the HBG material was thought to be the holotype (Watson 1962) and as Sonder (1845) does not explicitly indicate a single specimen, holdings at the Natural History Museum of Denmark (C), HBG, Lund University Botanical Museum (LD), LE, MEL, and the Swedish Museum of Natural History (S) should be considered syntypes under Art. 9.5 and Art. 40 Note 1 (McNeill et al 2012, McNeill 2014).

At the same time, however, holdings at MEL carry substantial evidence of having been used in preparing the protologue - sheet MEL710502 is from Sonder's personal herbarium, carries his personal notes and includes dissected flowers with a handwritten slip indicating the species name. The typification is therefore narrowed by lectotypification using the materials at MEL following Recommendations 9A.1 and 9A.3 (McNeill et al 2012). A second sheet MEL710596 has mounted upon it two pieces, with the upper annotated 'Part of type, ex Herb. Sonder.' and the lower as 'Haptotype, taken from the specimen in herb. MEL, ex herb Joachim Steetz'. These annotations were added by JH Willis in 1960 which suggests that, in all likelihood, this is the MEL material to which Watson (1962:99) referred

Andersonia heterophylla Sond. in Lehm., *Plantae Preissianae* 1: 333 (1845).

Type citation : 'In locis calcareis silvae ad radices jugi montium Darling's -Range, d. 29. Nov. 1839, *Herb. Priess. No 460*'.

Lectotype (designated here): Western Australia: In locis calcareis silvae ad radices jugi montium Darling's Range, d. 29 Nov. 1839. *Leg. L. Priess. No 460* (MEL710497!); isolectotypes: LD1240104 (image seen), LE (image seen at K).

Notes: The specimen at LE was previously listed as an isotype (Watson 1962, p. 101) and was the only type material noted in that citation. As no single holotype specimen was designated by Sonder (1845), materials at LD, LE and MEL are syntypes (McNeill et al 2012, McNeill 2014). Among these, the sheet at MEL is notable for in carrying annotations that can be directly associated with the describing author - MEL710497 is from Sonder's herbarium, annotated in his hand, and carries dissected flowers in a packet with a name slip written in Sonder's hand within it. It represents the best choice for lectotypification. On the sheet are mounted two separate pieces and the fertile piece in the centre of the sheet is selected as the lectotype. The smaller, sterile piece on the left is designated as an isolectotype. The isolectotypes at LD and LE (seen as a photograph at K) have not been annotated by the describing author.

Andersonia involucrata Sond. in Lehm., *Plantae Preissianae* 1: 331 (1845).

Type citation: In arenosis planitei districtus Sussex, d. 22 Dec. 1839, *Herb. Preiss no. 463* (Vasse River: Mrs Molloy!).

Lectotype (designated here): Western Australia: In arenosis planitei districtus Sussex, d. 22 Dec. 1839, *Herb. Preiss no. 463* (lecto: MEL710499!); isolecto BM001040261!, BR510410 (image seen), C10010878 (image seen), GH61281 (image seen), HBG507626 (image seen), L0006484!, LD1076174 (image seen), MEL233184!, MO2643949 (image seen at BM), P70746 (image seen), SO8-3060 (image seen).

Residual syntype: Vasse R: *Mrs Molloy s.n.*! (herbarium unknown).

Notes: The Melbourne sheet MEL710499 carries material from Sonder's herbarium, including dissected flowers and Sonder's hand-written slips indicating a species name. Two pieces are mounted side by side, and the more complete left hand specimen is designated as the lectotype. As with *A. brevifolia* (above), material at HBG was previously listed as a holotype (Watson 1962, p. 125) without explanation, and specimens at LE and BM identified as its isotypes. In the absence of a single specimen nominated by the author (Sonder 1845), all duplicates of *Preiss 463* should be considered syntypes under Article 9.5 (McNeill et al 2012). Given that the materials at MEL carry direct evidence of use by Sonder the typification is narrowed by lectotypification using MEL710499.

Sonder's (1845) description includes reference to a syntype 'Vasse R: Mrs Molloy!'; however no Molloy collection of this species has yet come to light. *Preiss*' number 463 is dated 22 December 1839, at which time he was visiting the Molloy's at the Vasse (Molloy 1840, Hasluck 2002). Georgiana Molloy (1840) records that the two collectors exchanged materials (Molloy 1840, Hasluck 2002), so it is possible that Sonder saw her specimens in *Preiss*' own herbarium. It is also conceivable that Molloy's collections of this date were sent to Mangles in February 1840 (Molloy 1840, Hasluck 2002) as part of her second dispatch of seeds and herbarium specimens.

Andersonia lehmanniana Sond. in Lehm., *Plantae Preissianae* 1:330 (1845).

Type citation: 'In solo limoso arenoso inter frutices prope oppidulum Guildford, Perth, d. 2 Jul. 1839. *Herb. Preiss No 457 (Drummond n.496!)*'.

Lectotype (designated here): Western Australia: ‘In solo limoso arenoso inter frutices prope oppidulum Guildford, Perth, d. 2 Jul. 1839. leg. *Preiss No 457* (MEL710501!); isolectotypes: MEL710494!, C10010880 (image seen), HBG507625 (image seen), LD1076238!, L402340!, L6485!, M0164774 (image seen), P760758 (image seen), P760759 (image seen), ?SO8-3067 (image seen).

Residual syntype: Swan River [Western Australia], *Drummond no. 496!* (MEL710495!, P00760760, LE (image seen at K))

Notes: *Preiss 457* and *Drummond 496* were not treated as syntypes by Watson (1962), when materials of *Preiss 457* at HBG and BM were identified as holo- and isotype, respectively. There was no argument for why the HBG specimen was given as the holotype, and Sonder’s (1845) citation of both gatherings means that they are syntypes (McNiell et al 2012). There are materials of *Drummond 496* at BM that originate from Shuttleworth’s herbarium and it is very likely that Sonder would have had access to them.

The most complete and best annotated of all the known type materials are of *Preiss 457* at MEL, where MEL710501 includes a Sonder label with a draft species description and dissected flowers. *Preiss 457* specimens at other herbaria carry no similar annotations. Materials of *Drummond 496* have been located at MEL, LE and P, but none carries annotations of the kind seen on MEL710501. The specimen of *Drummond 496* on MEL710494 was part of Ferdinand von Mueller’s collection. Kew holds a photograph (Kew Neg. 4541) of a sheet at LE that includes *Drummond 496* in a mixed mounting with *Drummond 495* of *A. lehmanniana* subsp. *pubescens* and an un-numbered ‘*Epacris pulchella*’.

subsp. pubescens (Sond.) L. Watson *Kew Bulletin* 16: 118 (1962).

A. pubescens Sond. in Lehm., *Plantae Preissianae* 1: 331 (1845).

Type citation: ‘Swan River: *Drummond n. 495!* (vidi in Herb. Shuttleworth)’

Lectotype (designated here): Western Australia: Swan River, 1839, *Drummond [1st series] 495* (BM1040268!; isolectotypes, MEL233203!, MEL233204! K! P760761 (image seen), LE).

Notes: The sheets at BM and K were earlier called as isotypes (Watson 1960), but are better considered syntypes (McNiell et al 2012). The specimen chosen as the lectotype (BM1040268) is annotated as having come from Shuttleworth’s herbarium, and is the most complete. Although MEL233204 is from Sonder’s own collection, numbered 495, and accompanied by handwritten notes it consists only of six small and separate fragments.

Andersonia sprengelioides R.Br. *Prodromus Florae Novae Hollandiae et Insulae Van-Diemen*: 554 (1810). *Sprengelia andersonii* F.Muell. *Fragmenta Phytographiae Australiae* 6: 64 (1867).

Type citation: “(M) v.v.”

Lectotype (designated here): Western Australia: King George’s Sound, December 1801, *R. Brown [Bennett No. 2502]* (BM1040269!); isolectotype: K349423!, K844564!, P760753 (image seen)

Synonym: *Andersonia patens* Sond. in Lehm., *Plantae Preissianae* 1:331 (1845).

Type citation: In solo turfoso inter frutices densos planitiei prope oppidulum Albany, Plantagenet, d. 8 Oct. 1840, *Herb. Priess. No. 451*.

Lectotype (designated here): MEL233194!, isolecto: MEL710491, HBG507623 (image seen), L6487!, L6488 (image seen), M164772 (image seen), M164773 (image seen) P760756 (image seen).

Synonym: *Andersonia fraseri* Sond. in Lehm., *Plantae Preissianae* 1: 331 (1845).

Type citation: In New South Wales leg. *Fraser!* (herb. Shuttleworth)’

Notes: Watson (1962) considered the material at BM as the holotype, and the K material as an isotype. However, the materials at these herbaria and at P are better considered syntypes (McNiell et al 2012, McNiell 2014). The typification is narrowed using the BM materials, which are the most complete.



Figure 1. Lectotype of *Andersonia aristata* Lindl. (CGE5075) The lectotype is indicated with an arrow. Reproduced with permission of Cambridge University.

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